Pilot Operated 2 Port Solenoid Valve
For Dry Air

Series VQ20/30

Compact and lightweight with large flow capacity

<table>
<thead>
<tr>
<th></th>
<th>Weight (g)</th>
<th>C [dm³/(s·bar)]</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQ20</td>
<td>46</td>
<td>1.5 (C8)</td>
</tr>
<tr>
<td>VQ30</td>
<td>80</td>
<td>3.0 (C12)</td>
</tr>
</tbody>
</table>

High frequency operation possible and long operating life

High speed response 7 ms or less (VQ20), 20 ms or less (VQ30)

(High speed response type without light/surge voltage suppressor at the supply pressure of 0.5 MPa)

20 million cycles (subject to clean and dry air)

Easy piping with One-touch Fittings

Dusttight low jetproof enclosure (IP65) compliant in DIN terminal type.

Application: Air-blow, Blow-off of workpiece, etc.
**Precautions**

*Be sure to read before handling. Refer to page 17-6-3 for Safety Instructions and Solenoid Valve Precautions.*

---

**Warning**

**Manual Override**

Regardless of electric signals to the solenoid valve, the manual override is used for switching the main valve. (DIN terminal only.)

Slotted locking type (tool required)

Push the manual override button with a small flat head screwdriver until it stops. Turn it in the counterclockwise direction at 90° to lock the manual. Turn it right to release.

---

**Caution**

**Connection and Electrical Circuit**

Black (–) DC  
Blue (100 VAC)  
Red (200 VAC)  
Red (+) DC  
Blue (100 VAC)  
Red (200 VAC)

With DC voltage power-saving circuit (with polarity)

Leads wire color | DIN connector |  DC voltage power-saving circuit (with polarity)
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>1 (+)</td>
<td>24 V</td>
</tr>
<tr>
<td>Black</td>
<td>2 (–)</td>
<td>0 V</td>
</tr>
</tbody>
</table>

**Power wave form of power-saving type (Rated voltage at 24 VDC)**

- Applied voltage: 24 V
- 0 V
- 2.9 W
- 0.6 W
- 0 W

**AC circuit**

Leads wire color | DIN connector |  AC circuit
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Blue (100 VAC), Red (200 VAC)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Blue (100 VAC), Red (200 VAC)</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

---

**Caution**

**Valve Mounting**

When mounting the valve, secure with brackets. When mounting it directly, tighten the mounting screws with the appropriate torque (0.2 to 0.23 N·m).

---

**Caution**

**When Energizing Continuously for Long Period of Time**

When energizing continuously, choose the option of an energy-saving circuit specifications. High speed response type (with no energy-saving circuit) cannot be energized continuously.

---

**How to Wire DIN Terminal**

**ISO#: Based on DIN 43650C (Pin gap 8 mm)**

**Connection**

1. Loosen the tightening screw and pull the connector off of the solenoid valve.
2. After removing the tightening screw, divide the terminal block and housing by prying open the slot area of the lower part of the terminal block open with a screwdriver.
3. Loosen the terminal screws of the block and insert stripped lead wires in accordance with the wiring diagram. Secure each wire by re-tightening the terminal screw (In the case of terminal 1: (+), 2: (-) DC)
4. Tighten the ground nut to secure the cable wire.

**Change of electrical entry**

Wire entry can be changed by mounting the housing in either direction (four directions at every 90°) after dividing the terminal block and the housing.

- For the indicator lighted style, be careful not to damage the light with the lead wire of the cable.

**Precautions**

Insert a connector straight or pull it out straight, using caution it does not be tilted.

**Applicable cable**

Cord O.D.: ø3.5 to ø7

(Reference) 0.5 mm² 2-core and 3-core wire equivalent to JIS C 3306.
## Precautions

Be sure to read before handling. Refer to page 17-6-3 for Safety Instructions and Solenoid Valve Precautions.

### DIN Terminal Part No. (Based on DIN)

<table>
<thead>
<tr>
<th>With Indicator Light</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without indicator light</td>
<td>SY100-82-4</td>
</tr>
<tr>
<td>With Indicator Light</td>
<td>SY100-82-2-01</td>
</tr>
<tr>
<td>24 VDC</td>
<td>SY100-82-3-05</td>
</tr>
<tr>
<td>12 VDC</td>
<td>SY100-82-3-06</td>
</tr>
<tr>
<td>100 VAC</td>
<td>SY100-82-2-01</td>
</tr>
<tr>
<td>200 VAC</td>
<td>SY100-82-2-02</td>
</tr>
<tr>
<td>110 VAC</td>
<td>SY100-82-2-03</td>
</tr>
</tbody>
</table>

### DIN Terminal Circuit with Indicator Light

- **AC circuit**
  - NL: Neon light
  - R: Resistor
- **DC circuit**
  - LED: Light emitting diode
  - R: Resistor

### Caution

**How to Mount/Remove from DIN Rail**

**Removing procedure**
1. Loosen the clamp screw on the "①" side of both ends of the manifold.
2. Lift the "①" side of the manifold off the DIN rail and slide it in the direction of the "②" side.

**Mounting procedure**
1. Hook the mounting hook on the "②" side of the manifold base to the DIN rail.
2. Lift the "②" side of the manifold off the DIN rail and slide it in the direction of the "①" side.
(Tightening torque: 0.3 to 0.4 N·m).

### Caution

**Valve Mounting**

After confirming the gasket is correctly placed under the valve, tighten the mounting screws with the appropriate torque (0.2 to 0.23 N·m).
Pilot Operated 2 Port Solenoid Valve
For Dry Air

Series VQ20/30

How to Order Valves (Single unit)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Series/Orifice size</th>
<th>Valve type</th>
<th>Body type</th>
<th>Coils voltage</th>
<th>Electrical entry</th>
<th>Option</th>
<th>Port size</th>
<th>Manual override</th>
<th>Electricity circuit</th>
<th>Oil-free specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>VQ</td>
<td>2</td>
<td>N.C.</td>
<td>A: Single unit</td>
<td>100 VAC (50/60 Hz)</td>
<td>G: Grommet</td>
<td>Nil: None</td>
<td>C6 Nil: None</td>
<td>F: With bracket</td>
<td>Symbol</td>
<td>DC voltage</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Y: DIN terminal</td>
<td></td>
<td>L: Type L (VQ20 only)</td>
<td></td>
<td>Symbol</td>
<td>With power-saving circuit</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>YO: DIN terminal without connector</td>
<td></td>
<td></td>
<td></td>
<td>Symbol</td>
<td>With surge voltage suppressor protection circuit</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Symbol</td>
<td>Note) Only normally closed</td>
</tr>
<tr>
<td>G</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Note) If ordering both options, indicate “LF”.</td>
<td>Note 1) Please consult with SMC for other voltages. Note 2) There is polarity for DC voltage (with power-saving circuit type).</td>
</tr>
<tr>
<td>C6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Note) H is available only for DC voltage and cannot be energized continuously.</td>
<td>Note) Please consult with SMC when using. Not available for manual operation.</td>
</tr>
</tbody>
</table>

Made to Order Specifications

Oil-free specifications

VQ31 AM1– [ ] [ ] [ ] [ ] [ ] [ ] [ ] X2

Seal material fluorine rubber specifications

VQ31 AM1– [ ] [ ] [ ] [ ] [ ] [ ] [ ] X5

For details about certified products conforming to international standards, visit us at www.smcworld.com.
Standard Specifications

<table>
<thead>
<tr>
<th>Valve specifications</th>
<th>VQ20</th>
<th>VQ30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve construction</td>
<td>2 port poppet pilot operated</td>
<td></td>
</tr>
<tr>
<td>Fluid</td>
<td>Air/inert gas</td>
<td></td>
</tr>
<tr>
<td>Ambient and fluid temperature</td>
<td>–10 to 50°C</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>Not required</td>
<td></td>
</tr>
<tr>
<td>Manual override</td>
<td>Slotted locking type (tool required)</td>
<td></td>
</tr>
<tr>
<td>Shock resistance/Vibration resistance</td>
<td>150/30 m/s²</td>
<td></td>
</tr>
<tr>
<td>Enclosure</td>
<td>Dustproof (4)</td>
<td></td>
</tr>
<tr>
<td>Mounting orientation</td>
<td>Unrestricted</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>46 g</td>
<td>80 g</td>
</tr>
<tr>
<td>Coil rated voltage</td>
<td>12 VDC, 24 VDC, 100 VAC, 110 VAC, 200 VAC</td>
<td></td>
</tr>
<tr>
<td>Allowable voltage fluctuation</td>
<td>±10% of rated voltage</td>
<td></td>
</tr>
<tr>
<td>Coil insulation type</td>
<td>Class B or equivalent</td>
<td></td>
</tr>
<tr>
<td>Power consumption</td>
<td>DC voltage (with power-saving circuit) Inrush: 2.9 W, Holding: 0.6 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DC voltage (without power-saving circuit) 2.9 W</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AC 2 VA</td>
<td></td>
</tr>
<tr>
<td>Electrical entry</td>
<td>Grommet, DIN terminal</td>
<td></td>
</tr>
</tbody>
</table>

Note 1) Use dry air to prevent condensation when operating at low temperatures.
Note 2) Manual override is available only for DIN terminal type.
Note 3) Vibration resistance: No malfunction occurred in a one-sweep test between 8.3 and 2000 Hz. Test was performed at both energized and de-energized states to the axis and right angle directions of the main valve and armature (value at the initial state).
Shock resistance: No malfunction resulted from the impact test using a drop impact tester. The test was performed on the axis and right angle directions of the main valve and armature for both energized and de-energized states (value at the initial state).

Note 4) DIN terminal type: Applicable to dusttight and low jetproof (IP65).

Characteristic Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>VQ20</th>
<th>VQ30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow characteristics</td>
<td>C6</td>
<td>C8</td>
</tr>
<tr>
<td>C [dm³/(s·bar)]</td>
<td>1.4</td>
<td>1.5</td>
</tr>
<tr>
<td>b 0.23</td>
<td>0.42</td>
<td>0.42</td>
</tr>
<tr>
<td>Cv 0.33</td>
<td>0.39</td>
<td>0.80</td>
</tr>
<tr>
<td>Min. operating pressure</td>
<td>0.01 MPa</td>
<td>0.6 MPa</td>
</tr>
<tr>
<td>Max. operating pressure</td>
<td>0.6 MPa</td>
<td>0.5 MPa</td>
</tr>
<tr>
<td>Response time</td>
<td>With power-saving circuit</td>
<td>High speed response type</td>
</tr>
<tr>
<td>ON 10 ms or less</td>
<td>7 ms or less</td>
<td>25 ms or less</td>
</tr>
<tr>
<td>OFF 15 ms or less</td>
<td>5 ms or less</td>
<td>15 ms or less</td>
</tr>
</tbody>
</table>

Note 1) JIS B 8375 (value of DC voltage specifications at 0.5 MPa supply pressure) (Value of high response time is subject to change upon pressure, quality of air.)
Note 2) It cannot be used when energized continuously.

Construction

Component Parts

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solenoid coil</td>
<td>Resin</td>
</tr>
<tr>
<td>2</td>
<td>Body</td>
<td>Resin</td>
</tr>
<tr>
<td>3</td>
<td>Fixed armature</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>4</td>
<td>Armature</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>5</td>
<td>Return spring</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>6</td>
<td>Poppet</td>
<td>NBR</td>
</tr>
<tr>
<td>7</td>
<td>Diaphragm assembly</td>
<td>HNBR, Resin</td>
</tr>
</tbody>
</table>
Dimensions: Series VQ20

In-line Type: Grommet (G)
VQ21A1-G/L50132

Mounting holes 2-ø3.2 through

Bracket mounting holes 2-ø3.2 through

Lead wire length: 300

P port
C6: One-touch fitting for ø6
C8: One-touch fitting for ø8

A port
C6: One-touch fitting for ø6
C8: One-touch fitting for ø8

Dotted line: Bracket mounting style (-F)
Dimensions: Series VQ20

Type L: Grommet (G)
VQ21A1-G-L

- Dotted line: Bracket mounting style (-LF)

- Light

- C6: One-touch fitting for ø6
- C8: One-touch fitting for ø8

- A port
  - C6: One-touch fitting for ø6
  - C8: One-touch fitting for ø8

- 2-ø3.2 mounting hole

VC
VDW
VQ
VX2
VX
VX3
VXA
VN
LVC
LVA
LVH
LVD
LVQ
LQ
LVN
TV/TIL
PA
PAX
PB
Dimensions: Series VQ20

In-line Type: DIN terminal (Y)
VQ21A1-□□□□□□□□

Mounting hole 2-Ø3.2 through
Bracket mounting hole 2-Ø3.2 through

Applicable cable O.D.
Ø3.5 to Ø7.0 mm

P port
C6: One-touch fitting for Ø6
C8: One-touch fitting for Ø8

A port
C6: One-touch fitting for Ø6
C8: One-touch fitting for Ø8

Dotted line: Bracket mounting style (-F)
Dimensions: Series VQ30

In-line Type: Grommet (G)

VQ31A1-G/L50132

---

Dotted line: Bracket mounting style (-F)
Dimensions: Series VQ30

DIN terminal (Y)
VQ31A1-\(\hat{Y}\)A\(\hat{Y}\)A\(\hat{Y}\)

Mounting hole 2-ø4.3 through

Bracket mounting hole 2-ø4.3 through

Manual override

Applicable cable O.D. ø3.5 to ø7.0 mm

C10: One-touch fitting for ø10
C12: One-touch fitting for ø12

P port

A port

C10: One-touch fitting for ø10
C12: One-touch fitting for ø12

Dotted line: Bracket mounting style (-F)
# How to Order Manifold

**VV2Q 22 08**

### Series
- **2** VQ20
- **3** VQ30

### Stations
- **01** 1 station
- **...**
- **20** 20 stations

### P port/Thread type
- **Nil** Rc 3/8
- **00N** NPT 3/8
- **00T** NPTF 3/8
- **00F** G 3/8

### Option
- **N** Nil
- **D** DIN rail mounting
- **DO** DIN rail mounting (Without DIN rail)

### Port size
- **2** 1 station
- **...**
- **20** 20 stations

### Manual override
- **Nil** None
- **D** DIN rail mounting
- **DO** DIN rail mounting (Without DIN rail)

## How to Order Valves (For Manifold)

**VQ 21 M1 11 G C6**

### Series/Orifice size
- **2** VQ20
- **3** VQ30

### Valve Type
- **N.C.** (A)
- **2**
- **3**
- **4**
- **5**
- **6**
- **9** Other

### Valve specifications
- **M** Manifold

### Electrical entry
- **G** Grommet
- **Y** DIN terminal
- **YO** DIN terminal (without connector)

### Coil voltage
- **1** 100 VAC (50/60 Hz)
- **2** 200 VAC
- **3** 110 VAC
- **4** 24 VDC
- **5** 12 VDC

### Port size
- **C6** One-touch fitting for ø6
- **C8** One-touch fitting for ø8
- **C10** One-touch fitting for ø10
- **C12** One-touch fitting for ø12

### Manual override
- **Nil** None
- **B** Slotted locking type (tool required)

### Electricity circuit
- **Nil** With power-saving circuit (with surge voltage suppressor protection circuit)
- **Z** With power-saving circuit (with light/surge voltage suppressor protection circuit)
- **H** High speed response type (without energy-saving, light/surge voltage suppressor circuit)

### Made to Order Specifications

**VQ 3 1M1- X2 VQ 3 1M1- X5**

Note) Please consult with SMC when using. Not available for manual operation.
Dimensions

Plug lead unit manifold (VQ22-□□)

**Formulas**

\[ L_1 = (n - 1) \times 29 + 49 \]

\[ L_2 = L_1 - 10 \]

\[ L_3 = L_4 - 10.5 \]

\[ L_5 = L_1 - 11.2 \]

**Dimensions**

| L | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| L1| 49 | 78 | 107| 136| 165| 194| 223| 252| 281| 310| 339| 368| 397| 426| 455| 484| 513| 542| 571| 600|
| L2| 39 | 68 | 97 | 126| 155| 184| 213| 242| 271| 300| 329| 358| 387| 416| 445| 474| 503| 532| 561| 590|
| L3| 75 | 100| 137.5| 162.5| 187.5| 212.5| 250| 275| 300| 337.5| 362.5| 387.5| 425| 450| 475| 500| 537.5| 562.5| 587.5| 625|
| L4| 85.5| 110.5| 148| 173| 198| 223| 260.5| 285.5| 310.5| 348| 373| 398| 435.5| 460.5| 485.5| 510.5| 548| 573| 598| 635.5|
| L5| 37.8| 66.8| 95.8| 124.8| 153.8| 182.8| 211.8| 240.8| 269.8| 298.8| 327.8| 356.8| 385.8| 414.8| 443.8| 472.8| 501.8| 530.8| 559.8| 588.8|

17-2-90
Pilot Operated 2 Port Solenoid Valve
For Dry Air Series VQ20/30

Dimensions

Plug lead unit manifold (VVQ2Q32-□□□)

Mounting hole
2-ø4.5 through

A port
C10: One-touch fitting for ø10
C12: One-touch fitting for ø12

Dotted line: DIN rail mounting (-D)

Formulas
L1 = (n – 1) x 37 + 56
L2 = L1 – 10
L3 = L4 – 10.5
L5 = L1 – 11.2

DIN rail mounting
4-M3 x 0.5

Dimensions

<table>
<thead>
<tr>
<th>L1</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>L2</td>
<td>46</td>
<td>83</td>
<td>120</td>
<td>157</td>
<td>194</td>
<td>231</td>
<td>268</td>
<td>305</td>
<td>342</td>
<td>379</td>
<td>416</td>
<td>453</td>
<td>490</td>
<td>527</td>
<td>564</td>
<td>601</td>
<td>638</td>
<td>675</td>
<td>712</td>
<td>749</td>
</tr>
<tr>
<td>L3</td>
<td>75</td>
<td>112.5</td>
<td>150</td>
<td>187.5</td>
<td>225</td>
<td>261.5</td>
<td>300</td>
<td>337.5</td>
<td>375</td>
<td>412.5</td>
<td>450</td>
<td>487.5</td>
<td>525</td>
<td>562.5</td>
<td>587.5</td>
<td>625</td>
<td>662.5</td>
<td>700</td>
<td>737.5</td>
<td>775</td>
</tr>
<tr>
<td>L4</td>
<td>85.5</td>
<td>123</td>
<td>160.5</td>
<td>198</td>
<td>235.5</td>
<td>273</td>
<td>310.5</td>
<td>348</td>
<td>385.5</td>
<td>423</td>
<td>460.5</td>
<td>498</td>
<td>535.5</td>
<td>573</td>
<td>610</td>
<td>635.5</td>
<td>673</td>
<td>710.5</td>
<td>748</td>
<td>785.5</td>
</tr>
<tr>
<td>L5</td>
<td>44.8</td>
<td>81.8</td>
<td>118.8</td>
<td>155.8</td>
<td>192.8</td>
<td>229.8</td>
<td>266.8</td>
<td>303.8</td>
<td>340.8</td>
<td>377.8</td>
<td>414.8</td>
<td>451.8</td>
<td>488.8</td>
<td>525.8</td>
<td>562.8</td>
<td>599.8</td>
<td>636.8</td>
<td>673.8</td>
<td>710.8</td>
<td>747.8</td>
</tr>
</tbody>
</table>
Series VQ20/30

Single Unit Option

Bracket assembly (with 2 mounting screws)

For fixing this solenoid valve.

Manifold Option

DIN rail
AXT100-DR-

* Suffix the number from DIN rail dimensions table below. Refer to the dimension drawing for each manifold for L dimension.

Each manifold can be mounted on a DIN rail. Order with the option symbol “-D” to specify DIN rail mounting style. The DIN rail is approximately 30 mm longer than the length of manifold.

<table>
<thead>
<tr>
<th>Stations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>No.</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>17</td>
<td>20</td>
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<td>40</td>
<td>43</td>
<td>45</td>
<td>47</td>
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<tr>
<td>L</td>
<td>85.5</td>
<td>110.5</td>
<td>148</td>
<td>173</td>
<td>198</td>
<td>223</td>
<td>248</td>
<td>273</td>
<td>298</td>
<td>323</td>
<td>348</td>
<td>373</td>
<td>398</td>
<td>423</td>
<td>448</td>
<td>473</td>
<td>498</td>
<td>523</td>
<td>548</td>
<td></td>
</tr>
</tbody>
</table>

L dimension
* Series VQ20

<table>
<thead>
<tr>
<th>Stations</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>7</th>
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<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>6</td>
<td>8</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>17</td>
<td>20</td>
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<td>473</td>
<td>498</td>
<td>523</td>
<td>548</td>
<td></td>
</tr>
</tbody>
</table>

DIN rail mounting bracket
VVQZ100-DB-5

This bracket is used for mounting the manifold on the DIN rail. DIN rail mounting bracket is attached on the manifold. 1 set of DIN rail mounting brackets for 1 manifold includes 2 brackets.

Blanking plate assembly (with O-ring and 2 mounting screws)

Mount a blank plate on valve manifold when a valve is disassembled for maintenance purposes, or when spare valve unit is supposed to be mounted in the future.
Safety Instructions

These safety instructions are intended to prevent a hazardous situation and/or equipment damage. These instructions indicate the level of potential hazard by labels of "Caution", "Warning" or "Danger". To ensure safety, be sure to observe ISO 4414\(^\text{Note 1)}\), JIS B 8370\(^\text{Note 2)}\) and other safety practices.

⚠️ **Caution** : Operator error could result in injury or equipment damage.

⚠️ **Warning** : Operator error could result in serious injury or loss of life.

⚠️ **Danger** : In extreme conditions, there is a possible result of serious injury or loss of life.

\(^\text{Note 1)}\) ISO 4414: Pneumatic fluid power--General rules relating to systems.

\(^\text{Note 2)}\) JIS B 8370: General Rules for Pneumatic Equipment

---

**Warning**

1. **The compatibility of pneumatic equipment is the responsibility of the person who designs the pneumatic system or decides its specifications.**

   Since the products specified here are used in various operating conditions, their compatibility for the specific pneumatic system must be based on specifications or after analysis and/or tests to meet your specific requirements. The expected performance and safety assurance will be the responsibility of the person who has determined the compatibility of the system. This person should continuously review the suitability of all items specified, referring to the latest catalog information with a view to giving due consideration to any possibility of equipment failure when configuring a system.

2. **Only trained personnel should operate pneumatically operated machinery and equipment.**

   Compressed air can be dangerous if an operator is unfamiliar with it. Assembly, handling or repair of pneumatic systems should be performed by trained and experienced operators.

3. **Do not service machinery/equipment or attempt to remove components until safety is confirmed.**

   1. Inspection and maintenance of machinery/equipment should only be performed once measures to prevent falling or runaway of the driver objects have been confirmed.
   2. When equipment is to be removed, confirm the safety process as mentioned above. Cut the supply pressure for this equipment and exhaust all residual compressed air in the system.
   3. Before machinery/equipment is restarted, take measures to prevent shooting-out of cylinder piston rod, etc.

4. **Contact SMC if the product is to be used in any of the following conditions:**

   1. Conditions and environments beyond the given specifications, or if product is used outdoors.
   2. Installation on equipment in conjunction with atomic energy, railway, air navigation, vehicles, medical equipment, food and beverages, recreation equipment, emergency stop circuits, clutch and brake circuits in press applications, or safety equipment.
   3. An application which has the possibility of having negative effects on people, property, or animals, requiring special safety analysis.
3. Quality of operating fluids
Since the use of fluid which contains foreign matter can cause problems such as malfunction and seal failure by promoting wear of the valve seat and core, and by sticking to the sliding parts of the armature, etc., install a suitable filter (strainer) immediately upstream from the valve. As a general rule, use 80 to 100 mesh.

When used to supply water to boilers, substances such as calcium and magnesium which generate hard scale and sludge are included. Since this scale and sludge can cause valve malfunction, install water softening equipment, and a filter (strainer) directly upstream from the valve to remove these substances.

4. Quality of operating air

1) Use clean air.
If the compressed air supply includes chemicals, synthetic materials (including organic solvents), salinity, corrosive gas, etc., it can lead to damage or malfunction.

2) Install an air filter.
Install an air filter at the upstream side to the valve. Filtration degree should be $5\mu m$ or less.

3) Install an air dryer, after cooler, etc.
Compressed air that includes excessive drainage may cause malfunction of valves and other pneumatic equipment. To prevent this, install an air dryer or after cooler, etc.

4) If excessive carbon powder is seen, install a mist separator on the upstream side of the valve.
If excessive carbon powder is generated by the compressor, it may adhere to the inside of valves and cause malfunction. For compressed air quality, refer to “Air Cleaning Equipment” catalog.

5. Ambient environment
Operate within the ambient operating temperature range. After confirming the compatibility of the product’s component materials with the ambient environment, operate so that fluid does not adhere to the product’s exterior surfaces.

6. Countermeasures for static electricity
Since static electricity may be generated depending on the fluid being used, implement suitable countermeasures.
1. If air leakage increases or equipment does not operate properly, stop operation.
   Check mounting conditions after air and power supplies are connected. Initial function and leakage tests should be performed after installation.

2. Do not apply external force to the coil section. Apply spanner to the external connection part when tightening.

3. Avoid installing the coil downward. Foreign materials in the fluid may stick to the armature and it could cause malfunction. (In the case of VX series)

4. Do not warm the coil assembly part by the heat insulating material, etc. Tape heater for anti-freezing is applicable to use only for piping or body.

5. Other than fittings made of stainless steel or copper should be tightened with a bracket.

6. Do not use in locations subjected to vibrations. If impossible, arm from the body should be as short as possible to prevent resonance.

7. Instruction manual
   Install only after reading and understanding the safety instructions. Keep the catalog on life so that it can be referred to when necessary.

8. Coating
   Warnings or specifications indicated on the product should not be erased, removed, or covered up.

**Warning**

**Mounting**

| Series VC, VD, VQ | AC coil: 10% or less of rated voltage  
| DC coil: 2% or less of rated voltage |

| Series VX | AC coil: 20% or less of rated voltage  
| DC coil: 2% or less of rated voltage |

| Series VN | AC coil: 15% or less of rated voltage  
| DC coil: 3% or less of rated voltage |

**Caution**

1. Leakage voltage
   Particularly when using a resistor in parallel with a switching element and using a C-R element (surge voltage suppressor) to protect the switching element, take note that leakage current will flow through the resistor and C-R element, etc., creating a danger that the valve may not shut OFF.

2. Low temperature operation
   1) Valve use is possible to temperature extremes of –10°C. Take appropriate measures to avoid freezing of drainage, moisture etc. by using an air dryer.
   2) When using valves for water application in cold climates, take appropriate countermeasures to prevent the freezing in tubing after cutting the water supply from the pump, e.g. drain the water, etc. When heating by steam, be careful not to expose the coil portion to steam. Installation of dryer, heat retaining of the body are recommended to prevent the freezing in condition that dew-point temperature is high and ambient temperature is low.

**Selection**

**Port Direction**

1. Preparation before piping
   Before piping is connected, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe. Install piping so that it does not apply pulling, pressing, bending or other forces on the valve body.

2. Sealant tape
   When installing piping or fitting into a port, ensure that sealant material does not enter the port internally. Furthermore, when sealant tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.

3. Avoid connection of ground lines to piping, as this may cause electric corrosion of the system.

4. Always tighten threads with the proper tightening torque.
   When screwing fittings into valves, tighten with the proper tightening torque shown below.

**Selection**

**Series VQ20/30**
   When mounting the valve, secure with brackets. When mounting it directly, tighten the mounting screws with the appropriate torque (0.2 to 0.23 N·m).

**Warning**

**Series VX**

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>Applicable tightening torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>1.5 to 2</td>
</tr>
<tr>
<td>Rc 1/8</td>
<td>7 to 9</td>
</tr>
<tr>
<td>Rc 1/4</td>
<td>12 to 14</td>
</tr>
<tr>
<td>Rc 3/8</td>
<td>22 to 24</td>
</tr>
<tr>
<td>Rc 1/2</td>
<td>28 to 30</td>
</tr>
<tr>
<td>Rc 3/4</td>
<td>28 to 30</td>
</tr>
<tr>
<td>Rc 1</td>
<td>36 to 38</td>
</tr>
<tr>
<td>Rc 11/4</td>
<td>40 to 42</td>
</tr>
<tr>
<td>Rc 11/2</td>
<td>48 to 50</td>
</tr>
<tr>
<td>Rc 2</td>
<td>48 to 50</td>
</tr>
</tbody>
</table>

*Reference*

How to tighten M5 threads on the fittings
   After tightening by hand, use a tightening tool to add about 1/6 turn more. But when using miniature fittings, after tightening by hand, use a tightening tool to add 1/4 turn more. (When there are gaskets for universal elbow, universal tee, etc. in 2 locations, tighten them with twice as 1/2 turn.)

5. Connection of piping to products
   When connecting piping to a product, avoid mistakes regarding the supply port, etc.

6. Steam generated in a boiler contains a large amount of drainage.
   Be sure to operate with a drain trap installed.

7. In applications such as vacuum and non-leak specifications, use caution specifically against the contamination of foreign matters or airtightness of the fittings.
Be sure to read before handling. For detailed precautions on every series, refer to main text.

### Caution

1. Use the tightening torques shown below when making connections to the pilot port.

#### Operating Port Tightening Torque

<table>
<thead>
<tr>
<th>Operating port</th>
<th>Torque (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5</td>
<td>1/6 turn with a tightening tool after first tightening by hand 0.8 to 1.0</td>
</tr>
<tr>
<td>Rc, NPT 1/8</td>
<td>0.8 to 1.0</td>
</tr>
</tbody>
</table>

2. Use of metal fittings

Do not use metal fittings for piping on taper threads made of resin, as this may cause damage to the threads.

3. Use pilot ports and sensor (breathing) ports as indicated below.

<table>
<thead>
<tr>
<th>N.C.</th>
<th>Pressure</th>
<th>Exhaust</th>
<th>Exhaust</th>
</tr>
</thead>
<tbody>
<tr>
<td>N.O.</td>
<td>Exhaust</td>
<td>Pressure</td>
<td>Exhaust</td>
</tr>
<tr>
<td>Double acting</td>
<td>Pressure</td>
<td>Pressure</td>
<td>Exhaust</td>
</tr>
</tbody>
</table>

In the case of N.C. and N.O. types, the port which does not receive operating pressure is released to atmosphere. When intake and exhaust directly from the valve is not desired due to problems with the ambient environment or scattering of dust, etc., install piping and perform intake and exhaust at a location which does not present a problem.

4. For tubing connections, refer to pages 17-5-38 to 39.

### Electrical Connections

#### Caution

1. Use electrical wires for piping with more than 0.5 to 1.25 mm².

Further, do not allow excessive force to be applied to the lines.

2. Use electrical circuits which do not generate chattering in their contacts.

3. Use voltage which is within 10% of the rated voltage. In cases with a DC power supply where importance is placed on responsiveness, stay within 5% of the rated value. The voltage drop is the value in the lead wire section connecting the coil.

4. When electrical circuit is not acceptable for surge voltage generated by solenoid, install a surge absorber in parallel to the solenoid or use a optional type with surge killer.

(VCB, VCL: Class H coil, Series VCS, VDW, VX, VQ)

5. Series VX, VQ

Use the option with surge voltage suppressor, with surge voltage protection circuit.

### Wiring

#### Caution

1. Use electrical wires for piping with more than 0.5 to 1.25 mm².

Further, do not allow excessive force to be applied to the lines.

2. Use electrical circuits which do not generate chattering in their contacts.

3. Use voltage which is within 10% of the rated voltage. In cases with a DC power supply where importance is placed on responsiveness, stay within 5% of the rated value. The voltage drop is the value in the lead wire section connecting the coil.

4. When electrical circuit is not acceptable for surge voltage generated by solenoid, install a surge absorber in parallel to the solenoid or use a optional type with surge killer.

(VCB, VCL: Class H coil, Series VCS, VDW, VX, VQ)

5. Series VX, VQ

Use the option with surge voltage suppressor, with surge voltage protection circuit.
2/3 Port Process Valve Precautions 4

Be sure to read before handling.
For detailed precautions on every series, refer to main text.

Electrical Connections

**Warning**

**Series VC, VX**

**Conduit terminal**

In the case of the conduit terminal, make connections according to the marks shown below.
- Use the tightening torques below for each section.
- Properly seal the terminal connection (G 1/2) with the special wiring conduit, etc.

**View A-A**

(Internal connection diagram)

**Series VC**

**Conduit**

When used as an IP65 equivalent, use seal (Part no. VCW20-15-6) to install the wiring conduit. Also, use the tightening torque below for the conduit.

- **Class H coil**: AWG18
- **Class B coil**: AWG20

<table>
<thead>
<tr>
<th>Lead wire color</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC</td>
<td>Black</td>
<td>Red</td>
</tr>
<tr>
<td>100 VAC</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>200 VAC</td>
<td>Red</td>
<td>Red</td>
</tr>
<tr>
<td>Other AC</td>
<td>Gray</td>
<td>Gray</td>
</tr>
</tbody>
</table>

*There is no polarity.*

<table>
<thead>
<tr>
<th>Description</th>
<th>Part no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seal</td>
<td>VCW20-15-6</td>
</tr>
</tbody>
</table>

**Note** Please order separately.

**Series VN**

The figures below show the internal connection of DIN terminal or terminal box, so connect them with power supply.

**With DIN terminal box**

**With terminal box**

<table>
<thead>
<tr>
<th>Terminal no.</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN terminal</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>Terminal</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

Connect the conduit terminal according to the marks shown below.

**View A-A**

(Internal connection diagram)
2/3 Port Process Valve Precautions 5
Be sure to read before handling.
For detailed precautions on every series, refer to main text.

**Electrical Connections**

<table>
<thead>
<tr>
<th>Series VDW</th>
<th>(1) DC</th>
<th>Black</th>
<th>(2) 100 VAC</th>
<th>Blue</th>
<th>200 VAC</th>
<th>Red</th>
<th>Other AC</th>
<th>Gray</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Lead wire color</th>
<th>(1) DC</th>
<th>Black</th>
<th>(2) 100 VAC</th>
<th>Blue</th>
<th>200 VAC</th>
<th>Red</th>
<th>Other AC</th>
<th>Gray</th>
</tr>
</thead>
</table>

* There is no polarity.

**Series VQ20/30**

**Grommet**

- Black (–) DC
- Blue (100 VAC)
- Red (200 VAC)
- Red (+) DC
- Blue (100 VAC)
- Red (100 VAC)

* For energy-saving circuit, there is the polarity.

**DIN terminal**

Since internal connections are as shown below for the DIN terminal, make connections to the power supply accordingly.

<table>
<thead>
<tr>
<th>Terminal no.</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN terminal</td>
<td>+</td>
<td>–</td>
</tr>
</tbody>
</table>

* For energy-saving circuit, there is the polarity. Heavy-duty cord can be used up to the cable O.D. ø3.5 to 7.

**Electrical Circuit**

<table>
<thead>
<tr>
<th>Series VC (Class B coil)</th>
<th>Grommet, Conduit, Conduit terminal, DIN connector</th>
</tr>
</thead>
</table>

**DC circuit**

1 (+, –)  
2 (–, +)

**AC circuit**

1 (+, –)  
2 (–, +)

**Conduit terminal, DIN terminal**

**DC circuit**

1 (+, –)  
2 (–, +)

**AC circuit**

1 (+, –)  
2 (–, +)

**Series VC (Class H coil)**

**Grommet, Conduit, Conduit terminal**

**AC circuit**

1 (+, –)  
2 (–, +)

**Series VDW**

**DC circuit**

1 (+, –)  
2 (–, +)

**AC circuit**

1 (+, –)  
2 (–, +)

---

**Ground nut**

Tightening torque 1.65 to 2.5 N·m

**Washer**

Grommet (Rubber)

**Holding screw**

Tightening torque 0.3 to 0.4 N·m

**Housing**

**Terminal screw (3 locations)**

Tightening torque 0.2 to 0.25 N·m

**Shaved part**

---

**Voltage symbol**

**Position for light mounting**

**Terminal block**

---

**Rectifying device**

**ZNR**

**SOL.**
Be sure to read before handling.
For detailed precautions on every series, refer to main text.

**Caution**

**Series VX**
- Grommet, Conduit, Conduit terminal, DIN connector
- DC circuit
  - 1 (+, -)
  - 2 (–, +)
  - Without indicator light

**Series VQ20/30**
- Grommet, DIN terminal
  - DC circuit
  - 1 (+, –)
  - 2 (–, +)
  - With indicator light

**Grommet, Conduit terminal, DIN connector**
- DC circuit
  - 1 (+, -)
  - 2 (–, +)
  - With indicator light

**AC circuit**
- 1 (+)
- 2 (–)
- Without indicator light

**Conduit terminal, DIN terminal**
- DC circuit
  - 1 (+, -)
  - 2 (–, +)
  - With indicator light

**AC circuit**
- 1 (+)
- 2 (–)
- Without indicator light

**Grommet**
- DC voltage
  - (With energy-saving circuit)
  - 1 (+)
  - 2 (–)
  - Indicator light

**AC circuit**
- Rectifying device
- 1 (+)
- 2 (–)
- Indicator light

**DIN terminal**
- DC voltage
  - (With energy-saving circuit)
  - 1 (+)
  - 2 (–)
  - Indicator light

**AC circuit**
- Rectifying device
- 1 (+)
- 2 (–)
- Without indicator light

---

**Electrical Circuit**

---

17-6-9
2/3 Port Process Valve Precautions

Be sure to read before handling.
For detailed precautions on every series, refer to main text.

### Operating Environment

**Warning**

1. Do not use valves in atmospheres of corrosive gases, chemicals, salt water, water or steam, or where there is direct contact with same.
2. Do not use in explosive atmospheres.
3. Do not use in locations where vibration or impact occurs.
4. Do not use in locations subject to emissive heat.
5. Employ suitable protective measures in locations where there is contact with water droplets, oil or welding spatter, etc.

### Precautions on Handling

**Warning**

1. Filters and strainers
   1) Be careful regarding clogging of filters and strainers.
   2) Replace filters after one year of use, or earlier if the amount of pressure drop reaches 0.1 MPa.
   3) Clean the strainer when pressure drop exceeds 0.1 MPa.

2. Lubrication
   If operated with lubrication, be sure to continue the lubrication.

3. How to store for a long period of time
   Remove water completely from valves before storing for a long period of time to avoid the dust generation and damage to the rubber material.

4. Flush drainage from filters regularly.

**Caution**

1. The valve has been lubricated for life at manufacture, and does not require lubrication in service.
   If a lubricant is used in the system, use turbine oil Class 1, ISO VG32 (no additive). But do not lubricate the valve with EPR seal.
   Refer to the below brand name table of lubricants compliant to Class 1 turbine oil (without additive), ISO VG32.

<table>
<thead>
<tr>
<th>Classification of viscosity (cst) (40°C)</th>
<th>Viscosity according to ISO Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idemitsu Kosan Co., Ltd.</td>
<td>Turbine oil P-32</td>
</tr>
<tr>
<td>Nippon Mitsubishi Oil Corp.</td>
<td>Turbine oil 32</td>
</tr>
<tr>
<td>Cosmo Oil Co., Ltd.</td>
<td>Cosmo turbine 32</td>
</tr>
<tr>
<td>Japan Energy Corp.</td>
<td>Kyodo turbine 32</td>
</tr>
<tr>
<td>Kygnus Oil Co.</td>
<td>Turbine oil 32</td>
</tr>
<tr>
<td>Kyushu Oil Co.</td>
<td>Stork turbine 32</td>
</tr>
<tr>
<td>NIPPON OIL CORPORATION</td>
<td>Mitsubishi turbine 32</td>
</tr>
<tr>
<td>Showa Shell Sekiyu K.K.</td>
<td>Turbine 32</td>
</tr>
<tr>
<td>Tonen General Sekiyu K.K.</td>
<td>General R turbine 32</td>
</tr>
<tr>
<td>Fuji Kosan Co., Ltd.</td>
<td>Fucoaol turbine 32</td>
</tr>
</tbody>
</table>

Please contact SMC regarding Class 2 turbine oil (with additives), ISO VG32.

### Lubrication

**Warning**

1. Do not use valves in atmospheres of corrosive gases, chemicals, salt water, water or steam, or where there is direct contact with same.
2. Do not use in explosive atmospheres.
3. Do not use in locations where vibration or impact occurs.
4. Do not use in locations subject to emissive heat.

**Caution**

1. Filters and strainers
   1) Be careful regarding clogging of filters and strainers.
   2) Replace filters after one year of use, or earlier if the amount of pressure drop reaches 0.1 MPa.
   3) Clean the strainer when pressure drop exceeds 0.1 MPa.

2. Lubrication
   If operated with lubrication, be sure to continue the lubrication.

3. How to store for a long period of time
   Remove water completely from valves before storing for a long period of time to avoid the dust generation and damage to the rubber material.

4. Flush drainage from filters regularly.

### Maintenance and Inspection

**Warning**

1. When the diaphragm is made of PTFE
   Please note that when the product is shipped from the factory, gases such as N2 and air may leak from the valve at a rate of 1 cm³/min (when pressurized).

**Caution**

1. Do not disassemble the product. Products which have been disassembled cannot be guaranteed. If disassembly is necessary, please contact SMC.

2. Do not disassemble the product. Products which have been disassembled cannot be guaranteed. If disassembly is necessary, please contact SMC.

### Precautions on Handling

**Warning**

1. Valves will reach high temperatures from high temperature fluids. Use caution, as there is a danger of being burned if a valve is touched directly.

**Caution**

1. Series LV
   Please note that when the product is shipped from the factory, gases such as N2 and air may leak from the valve at a rate of 1 cm³/min (when pressurized).

2. When operated at a very low flow rate, the series LV with flow rate adjustment may vibrate, etc. depending on the operating conditions. Therefore, operate it after careful examination of the flow rate, pressure and piping conditions.

3. In the series LV, water hammering may occur depending on the fluid pressure conditions. In most cases, improvement is possible by adjusting the pilot pressure with a speed controller, etc., but the flow rate, pressure and piping conditions should be reviewed.

4. To adjust the flow rate for the series LV with flow rate adjustment, open gradually starting from the fully closed condition.

Opening is accomplished by turning the adjustment knob counterclockwise. It is in the fully closed condition when the product is shipped from the factory.

5. After a long period of nonuse, perform a test run before beginning regular operation.

6. Since the LVC is packaged in a clean room use sufficient care in handling when opened.
Quality Assurance Information (ISO 9001, ISO 14001)

Reliable quality of products in the global market

To enable our customers throughout the world to use our products with even greater confidence, SMC has obtained certification for international standards “ISO 9001” and “ISO 14001”, and created a complete structure for quality assurance and environmental controls. SMC products pursue to meet its customers’ expectations while also considering company’s contribution in society.

Quality management system
ISO 9001

This is an international standard for quality control and quality assurance. SMC has obtained a large number of certifications in Japan and overseas, providing assurance to our customers throughout the world.

Environmental management system
ISO 14001

This is an international standard related to environmental management systems and environmental inspections. While promoting environmentally friendly automation technology, SMC is also making diligent efforts to preserve the environment.
SMC products complying with EN/ISO, CSA/UL standards are supporting

The CE mark indicates that machines and components meet essential requirements of all the EC Directives applied. It has been obligatory to apply CE marks indicating conformity with EC Directives when machines and components are exported to the member Nations of the EU. Once “A manufacturer himself” declares a product to be safe by means of CE marking (declaration of conformity by manufacturer), free distribution inside the member Nations of the EU is permissible.

**CE Mark**

SMC provides CE marking to products to which EMC and Low Voltage Directives have been applied, in accordance with CETOP (European hydraulics and pneumatics committee) guide lines.

**As of February 1998, the following 18 countries will be obliged to conform to CE mark legislation**

Iceland, Ireland, United Kingdom, Italy, Austria, Netherlands, Greece, Liechtenstein, Sweden, Spain, Denmark, Germany, Norway, Finland, France, Belgium, Portugal, Luxembourg

**EC Directives and Pneumatic Components**

- **Machinery Directive**
  The Machinery Directive contains essential health and safety requirements for machinery, as applied to industrial machines e.g. machine tools, injection molding machines and automatic machines. Pneumatic equipment is not specified in Machinery Directive. However, the use of SMC products that are certified as conforming to EN Standards, allows customers to simplify preparation work of the Technical Construction File required for a Declaration of Conformity.

- **Electromagnetic Compatibility (EMC) Directive**
  The EMC Directive specifies electromagnetic compatibility. Equipment which may generate electromagnetic interference or whose function may be compromised by electromagnetic interference is required to be immune to electromagnetic affects (EMS/immunity) without emitting excessive electromagnetic affects (EMI/emission).

- **Low Voltage Directive**
  This directive is applied to products, which operate above 50 VAC to 1000 VAC and 75 VDC to 1500 VDC operating voltage, and require electrical safety measures to be introduced.

- **Simple Pressure Vessels Directive**
  This directive is applied to welded vessels whose maximum operating pressure (PS) and volume of vessel (V) exceed 50 bar/L. Such vessels require EC type examination and then CE marking.
you to comply with EC directives and CSA/UL standards.

**CSA Standards & UL Standards**
UL and CSA standards have been applied in North America (U.S.A. and Canada) symbolizing safety of electric products, and are defined to mainly prevent danger from electric shock or fire, resulting from trouble with electric products. Both UL and CSA standards are acknowledged in North America as the first class certifying body. They have a long experience and ability for issuing product safety certificate. Products approved by CSA or UL standards are accepted in most states and governments beyond question. Since CSA is a test certifying body as the National Recognized Testing Laboratory (NRTL) within the jurisdiction of Occupational Safety and Health Administration (OSHA), SMC was tested for compliance with CSA Standards and UL Standards at the same time and was approved for compliance with the two Standards. The above CSA NRTL/C logo is described on a product label in order to indicate that the product is approved by CSA and UL Standards.

**TSSA (MCCR) Registration Products**
TSSA is the regulation in Ontario State, Canada. The products that the operating pressure is more than 5 psi (0.03 MPa) and the piping size is bigger than 1 inch. fall into the scope of TSSA regulation.

**Products conforming to CE Standard**

With CE symbol for simple visual recognition

In this catalog each accredited product series is indicated with a CE mark symbol. However, in some cases, every available models may not meet CE compliance. Please visit our web site for the latest selection of available models with CE mark.

http://www.smcworld.com
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<th>Country</th>
<th>Address</th>
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</thead>
<tbody>
<tr>
<td>Europe</td>
<td>Finland</td>
<td>GRU Pneumatics Finland OY, PL72, Tistintaehallituskie 4, SF-02231 Espoo, Finland</td>
<td>TEL: 09-8595-80</td>
<td>FAX: 09-8595-859</td>
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<td>Belgium (Distributor)</td>
<td>SMC Pneumatics N.V./S.A., Nijverheidstraat 20 B, 2160 Wommelgem, Belgium</td>
<td>TEL: 03-355-1464</td>
<td>FAX: 03-355-1466</td>
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<td>Russia (Distributor)</td>
<td>SMC Pneumatics LLC, 36/40 Sredny Prospect V.O. St. Petersburg 199004, Russia</td>
<td>TEL: 812-355-1464</td>
<td>FAX: 812-355-1466</td>
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<td>Czech (Distributor)</td>
<td>SMC Pneumatics CZ s.r.o., Hudcova 78a, CZ-61200 Brno, Czech Republic</td>
<td>TEL: 05-4121-8034</td>
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<td>Hungary (Distributor)</td>
<td>SMC Hungary Ipari Automatizálási kft, Budafoki ut 107-113 1117 Budapest</td>
<td>TEL: 01-371-1343</td>
<td>FAX: 01-371-1344</td>
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<td>SMC Romania S.r.l., Str. Frunzei, Nr. 29, Sector 2, Bucharest, Romania</td>
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<td>FAX: 01-3205149</td>
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<td>SMC Priemyselna Automatizacia, s.r.o., Nova 3, SK-83103 Bratislava</td>
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<td>SMC Industrijska Avtomatika d.o.o., Grajski trg 15, SLO-8360 Zuzemberk, Slovenia</td>
<td>TEL: 07988-5240</td>
<td>FAX: 07988-5249</td>
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<td>Latvia (Distributor)</td>
<td>SMC Pneumatics Latvija SIA, Šmerļa iela 1-705, Rīga LV-1006</td>
<td>TEL: 777 94 74</td>
<td>FAX: 777 94 75</td>
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<td>Hylo Southern Africa (Pty.) Ltd., 101, Newlands, 7420 South Africa</td>
<td>TEL: 021-511-7021</td>
<td>FAX: 021-511-4456</td>
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<td>Egypt (Distributor)</td>
<td>Saadani Trading &amp; Ind. Services, 15 Sebaai Street, Alexandria, Egypt</td>
<td>TEL: 3-548-50-34</td>
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<td>Oceania/Asia</td>
<td>Australia (SMC Pneumatics (Australia) Pty Ltd.)</td>
<td>14-18 Hudson Avenue Castle Hill NSW 2154, Australia</td>
<td>TEL: 02-9354-8222</td>
<td>FAX: 02-9894-5719</td>
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<td>New Zealand (SMC Pneumatics (New Zealand) Ltd.)</td>
<td>8C Sylvia Park Road Mt.Wellington Auckland, New Zealand</td>
<td>TEL: 09-573-7027</td>
<td>FAX: 09-573-7002</td>
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<td>Taiwan (SMC Pneumatics (Taiwan) Co., Ltd.)</td>
<td>17, Lane 205, Nansan Rd., Sec.2, Luzhu-Hsien, Taoyuan-Hsien, TAIWAN</td>
<td>TEL: 03-322-3443</td>
<td>FAX: 03-322-3387</td>
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<td>Hong Kong (SMC Pneumatics (Hong Kong) Ltd.)</td>
<td>29/F, Clifford Centre, 778-784 Cheung, Sha Wan Road, Lai Chi Kok, Kowloon, Hong Kong</td>
<td>TEL: 2744-0121</td>
<td>FAX: 2785-1314</td>
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<td>Singapore (SMC Pneumatics (S.E.A.) Pte. Ltd.)</td>
<td>89 Tusias Avenue 1, Jurong Singapore 639520</td>
<td>TEL: 6861-0888</td>
<td>FAX: 6861-1889</td>
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<td>Philippines (SMC Pneumatics Corp)</td>
<td>Unit 201 Common Goal Tower, Madrigal Business Park, Ayala Alabang Muntinlupa, Philippines</td>
<td>TEL: 02-805065</td>
<td>FAX: 02-805068</td>
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<td>Malaysia (SMC Pneumatics (S.E.A.) Sdn. Bhd.)</td>
<td>Lot 36 Jalan Delima 1/1, Subang Hi-Tech Industrial Park, Batu 3 40000 Shah Alam Selangor, Malaysia</td>
<td>TEL: 03-56350590</td>
<td>FAX: 03-56350602</td>
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<td>South Korea (SMC Pneumatics Korea Co., Ltd.)</td>
<td>Wooolm e-BIZ Center (Room 1008), 170-5, Guro-Dong, Guro-Gu, Seoul, 152-050, South Korea</td>
<td>TEL: 02-3219-0700</td>
<td>FAX: 02-3219-0702</td>
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<tr>
<td></td>
<td>China (SMC China Co., Ltd.)</td>
<td>7 Wan Yuan St. Beijing Economic &amp; Technological Development Zone 100176, China</td>
<td>TEL: 010-67882111</td>
<td>FAX: 010-67881837</td>
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<td>Thailand (SMC Thailond Ltd.)</td>
<td>134/6 Moo 5, Tiewan Road, Bangkok, Amphur Muang, Pathumthani 12000, Thailand</td>
<td>TEL: 02-963-7099</td>
<td>FAX: 02-501-2937</td>
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<td>India (SMC Pneumatics (India) Pvt. Ltd.)</td>
<td>D-107 to 112, Phase-2, Extension, Noida, Dist. Gautam Budh Nagar, Uttar Pradesh, India</td>
<td>TEL: (0120)-4568730</td>
<td>FAX: 0120-4568933</td>
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<td>Indonesia (SMC Pneumatics (India) Pvt. Ltd.)</td>
<td>Jalan Hayam Wuruk Komplek Glodok Jaya No. 27-28 Jakarta 11180 Indonesia</td>
<td>TEL: 021-625 5548</td>
<td>FAX: 021-625 5888</td>
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<tr>
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<td>Pakistan (SMC Pneumatics (Pakistan) Pvt. Ltd.)</td>
<td>First Floor Mercantile Centre, Newton Road Near Bolton Market P.O. Box 6165 Karachi 74000 Pakistan</td>
<td>TEL: 021-241-4589</td>
<td>FAX: 021-241-4589</td>
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<td>Israel (SMC Pneumatics (Israel) Ltd.)</td>
<td>Kvozat Geva 18919 Israel</td>
<td>TEL: 04-653-5960</td>
<td>FAX: 04-653-1445</td>
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<td></td>
<td>Saudi Arabia (SMC Pneumatics (Saudi Arabia) Ltd.)</td>
<td>P.O. Box 3385 Al-Amir Majed Street, Jedda-21471, Saudi Arabia</td>
<td>TEL: 02-6708173</td>
<td>FAX: 02-6708173</td>
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